

COMPILER FOR ENABLING MULTIPLE SIGNED INDEPENDENT DATA ELEMENTS PER REGISTER

ABSTRACT OF THE DISCLOSURE

A compiler for data processing outputs lower-level code for packing multiple signed data elements per register into a processor's registers using the rules set forth herein, and when executed, the code simultaneously operates on the elements in a register in a single cycle using the same operand. The elements can be independent of each other as defined by compiler directives, and the sizes of the elements in a register can differ from each other. Moreover, a relatively large element can be split across multiple registers. In an exemplary application, a data stream representing two images can be simultaneously processed using the same number of registers as have been required to process a single image. Or, a single image can be processed approaching N- times faster, where N is the number of elements per register. In any case, the present invention results in a significant increase in processing efficiency.